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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,574	07/31/2003	Russell W. Gruhlke	10030719-1	5020
7590	02/02/2006			EXAMINER YAM, STEPHEN K
AGILENT TECHNOLOGIES, INC. Intellectual Property Administration Legal Department, DL429 P.O. Box 7599 Loveland, CO 80537-0599			ART UNIT 2878	PAPER NUMBER

DATE MAILED: 02/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/632,574	GRUHLKE ET AL.
	Examiner Stephen Yam	Art Unit 2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 15 November 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-24 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 November 2005 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

## **DETAILED ACTION**

This action is in response to Amendments and remarks filed on November 15, 2005. Claims 1-24 are currently pending.

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 285, 295 (Fig. 2d). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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3. Claims 11 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsunekuni et al. US Patent No. 4,712,100.

Regarding Claim 11, Tsunekuni et al. teach (see Fig. 3) an optical navigation system comprising a coherent source (5, 9, 6) (using a single light source- see Col. 3, lines 19-22) for providing a first portion ("A") of a beam comprising a first wavelength (since all light beams have a wavelength property) and a second portion ("B") of a beam comprising a second wavelength (since all light beams have a wavelength property) onto a target surface ("b"), a first detector (10) for receiving a first reflection (reflection of "A") of said first portion of said beam from said target surface (see Fig. 3), and a second detector (14) for receiving a second reflection (reflection of "B") of said second portion of said beam from said target surface (see Fig. 3) to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors in response to said first and said second reflections (see Abstract and Col. 3, lines 61-65).

Regarding Claim 17, Tsunekuni et al. teach a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection (see Col. 6, lines 9-14).

4. Claims 21, 23, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Piot et al. US Patent No. 6,256,016.

Regarding Claim 21, Piot et al. teach (see Fig. 3) an optical navigation system comprising a coherent source (250) (see Col. 7, lines 3-4) for providing a light beam (305) incident onto a target surface (120), a first detector (320a) for receiving a first portion of a reflection (see Col. 7,

lines 27-30) of said light beam from said target surface, and a second detector (320b) for receiving a second portion of said reflection of said light beam from said target surface to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors in response to said first and said second portions of said reflections (see Abstract).

Regarding Claim 23, Piot et al. teach an aperture (330b) (see Col. 13, lines 62-65) positioned between said second detector and said target surface to limit the field of view of said second detector.

Regarding Claim 24, Piot et al. teach said first detector as a correlation detector (see Fig. 6).

5. Claims 1, 5, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Boillot et al. US Patent No. 6,730,926.

Regarding Claim 1, Boillot et al. teach (see Fig. 1) an optical navigation system comprising a light source (20) for providing a light beam having a first wavelength (since all light beams have a wavelength property) incident onto a target surface (30), a coherent source (16) for providing a divergent beam (stripe pattern) (see Col. 3, lines 21-23 and Col. 5, lines 32-33) having a second wavelength (since all light beams have a wavelength property) incident onto said target surface (see Fig. 1), a first detector (13) for receiving a first reflection of said light beam from said target surface (see Col. 3, lines 6-14), and a second detector (14) for receiving a second reflection of said divergent beam from said target surface (see Col. 3, lines 17-18, 41-45) to allow the determination of the position of said first and said second detector with respect to

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said target surface from signals generated by said first and said second detectors in response to said first and said second reflections (see Col. 6, lines 15-17).

Regarding Claim 5, Boillot et al. teach a focusing lens positioned between said coherent source and said target surface (when converging light is used, since laser light is converged using a focusing lens- see Col. 7, lines 32-34).

Regarding Claim 8, Boillot et al. teach a collection lens disposed between said target surface and said second detector to increase the collection efficiency of said second reflection.

*Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al.

Regarding Claim 3, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. also teach the coherent source comprising a laser (see Col. 3, lines 17-18). Boillot et al. do not teach the coherent source as a VCSEL (vertical cavity surface emitting laser). It is well known in the art to use a VCSEL for a laser source, as the component is easily obtainable. It would have been obvious to one of ordinary skill in the art at

the time the invention was made to use a VCSEL for the coherent source of Boillot et al., to use standard components to save manufacturing and design time.

Regarding Claim 4, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach a wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection. It is well known in the art to provide wavelength filters for light sources and detectors, to reduce extraneous radiation outside a desired wavelength range for a more precise measurement and imaging. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection, in the system of Boillot et al., to reduce noise from undesired light radiation for increased detection contrast.

Regarding Claim 6, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach a collimating lens positioned between the light source and said target surface. It is well known in the art to provide collimated light for general illumination by using a collimating lens, to reduce noise patterns for light detection caused by non-uniform or overlapping illumination. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a collimating lens positioned between the light source and the target surface, in the system of Boillot et al., to provide uniform illumination to provide more accurate detection by the first detector.

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8. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al. in view of Piot et al.

Regarding Claims 2 and 9, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach the second reflection comprised of a speckle pattern or a third detector to receive the second reflection. Piot et al. teach (see Fig. 3) a similar system with a coherent light source (250) for providing a divergent beam (see Col. 7, lines 30-33), a second detector (320a) for receiving a reflection of the divergent beam, and a third detector (320b) for receiving the reflection of the divergent beam, with the second reflection comprised of a speckle pattern (see Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the second reflection comprised of a speckle pattern and a third detector to receive the second reflection, as taught by Piot et al., in the system of Boillot et al., to provide enhanced sensitivity and precision for detecting X-Y position changes.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al. in view of Tsunekuni et al.

Regarding Claim 7, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection. Tsunekuni et al. teach (see Fig. 3) a similar system, with a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection (see Col. 6, lines 9-14 and above paragraphs of rejection of Claims 11 and 17). It would have

been obvious to one of ordinary skill in the art at the time the invention was made to provide a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection, as taught by Tsunekuni et al., in the system of Boillot et al., to provide increased light transmission to the detector and improved versatility in the placement of the detector, taught by Tsunekuni et al. (see Col. 6, lines 9-14).

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al. in view of Dandliker et al. US Patent No. 5,907,152.

Regarding Claim 10, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach said second detector comprising detector strips alternating with non detector strips. Dandliker et al. teach (see Fig. 1 and 3A) a similar system with a detector comprising detector strips alternating with non detector strips (see Fig. 2A, 3A) for detecting position. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a detector comprising detector strips alternating with non detector strips, as taught by Dandliker et al., in the system of Boillot et al., to provide more sensitive detection of movement by using speckle analysis, as taught by Dankliker et al.

11. Claims 12, 13, 15, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunekuni et al.

Regarding Claims 12 and 19, Tsunekuni et al. teach the system in Claim 11, according to the appropriate paragraph above. Tsunekuni et al. do not teach a first and a second narrowband wavelength filter to produce said first and said second portions of said beam or a third

narrowband wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection. It is well known in the art to provide narrowband wavelength filters for light sources and detectors, to reduce extraneous radiation outside a desired wavelength range for a more precise measurement and imaging. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a first and a second narrowband wavelength filter to produce said first and said second portions of said beam and a third narrowband wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection, in the system of Tsunekuni et al., to reduce noise from undesired light radiation for increased detection contrast.

Regarding Claim 13, Tsunekuni et al. teach the system in Claim 11, according to the appropriate paragraph above. Tsunekuni et al. also teach the coherent source comprising a laser (see Col. 3, lines 17-19). Tsunekuni et al. do not teach the coherent source as a VCSEL (vertical cavity surface emitting laser). It is well known in the art to use a VCSEL for a laser source, as the component is easily obtainable. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a VCSEL for the coherent source of Tsunekuni et al., to use standard components to save manufacturing and design time.

Regarding Claims 15 and 16, Tsunekuni et al. teach the system in Claim 11, according to the appropriate paragraph above. Tsunekuni et al. do not teach a focusing lens operable to focus said second portion of said beam at position between said coherent source and said target surface or a collimating lens operable to collimate said first portion of said beam. It is well known in the art to use focusing or condensing lens for a light source, to condense or collimate the light for a

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precise laser pattern. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a focusing lens operable to focus said second portion of said beam at position between said coherent source and said target surface, or a collimating lens operable to collimate said first portion of said beam, in the system of Tsunekuni et al., to provide a clear laser pattern for more accurate laser detection.

12. Claims 14, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunekuni et al. in view of Piot et al.

Regarding Claims 14, 18, and 20, Tsunekuni et al. teach the system in Claim 11, according to the appropriate paragraph above. Tsunekuni et al. do not teach the second reflection comprised of a speckle pattern, a collection lens disposed between said target surface and said second detector to increase the collection efficiency of said second reflection, or a third detector to receive the second reflection. Piot et al. teach (see Fig. 3) a similar system with a coherent light source (250) for providing a divergent beam (see Col. 7, lines 30-33), a second detector (320a) for receiving a reflection of the divergent beam, and a third detector (320b) for receiving the reflection of the divergent beam, with the second reflection comprised of a speckle pattern (see Abstract) and a collection lens (315b) disposed between said target surface and said second detector to increase the collection efficiency of said second reflection. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the second reflection comprised of a speckle pattern, with a collection lens disposed between said target surface and said second detector to increase the collection efficiency of said second reflection, and a third detector to receive the second reflection, as taught by Piot et al., in the

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system of Tsunekuni et al., to provide enhanced sensitivity and precision for detecting X-Y position changes.

13. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Piot et al.

Regarding Claim 22, Piot et al. teaches the system in Claim 21, according to the appropriate paragraph above. Piot et al. do not teach said coherent source positioned at an angle between five and twenty degrees with respect to said target surface. It is well known in the art to adjust the placement and direction of a component in a system as appropriate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the coherent source positioned at an angle between five and twenty degrees with respect to said target surface, in the system of Piot et al., since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

*Response to Arguments*

14. Applicant's arguments filed November 15, 2005 have been fully considered but they are not persuasive.

With respect to the objections to the drawings, Applicant has not corrected the objection that reference number 285 (in Fig. 2d) is not disclosed in the specification and asserts that reference number 295 does not appear in Fig. 2d. Examiner asserts that reference number 295 does appear in Fig. 2d directly above 285 on the right-most beams emitted by light source 210.

Regarding Applicant's arguments on Claims 11 and 17, Applicant argues that Tsunekuni does not teach "the determination of the position of said first and second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections" as recited in Claim 11 and instead, that Tsunekuni teaches an optical system having a single light source and a single detector and further teaches alternative white and black in order to reduce the amount of light detected by light receiving sections associated with adjacent optical systems. Examiner asserts that Tsunekuni teaches a single combined optical system consisting of the optical sub-systems A, B, C, D, E (seen in Fig. 3 and 4), and Examiner asserts that the entire system disclosed in Fig. 3 and 4 and encompassing all the components displayed in Fig. 3 and 4 correspond to the claimed "optical navigation system" of Claim 11. Thus, multiple coherent sources 5, 6, 9 (in Fig. 3 and 4) are disclosed in the embodiment of Fig. 3 and 4, along with the teaching of an alternative embodiment for utilizing a single source with an optical fiber scope to provide the light emission (Col. 3, lines 19-22). Further, Examiner asserts that the alternating white and black in the embodiment of Tsunekuni (the edges between the circles as seen more clearly in Fig. 1 and 2) is used to detect any change/movement in position, as disclosed by Tsunekuni:

"In the case where the operating section 4 is located just over a single circle b as shown in the diagram, the light radiated from the light emitting section 9 all enters the light receiving section 14, while almost half of the lights emitted from the other light emitting sections 5 and 6 are absorbed by the black surface 2 and the residual half of the lights enter the light receiving sections 10 and 11. Consequently, it will be understood that if the position of the operating section 4 is deviated by merely a slight amount to the right or left (in the X-axis direction), the optical system B won't be influenced at all but the optical

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**systems A and C are shifted to the opposite states."** (Col. 3, lines 33-45, emphasis placed in **bold**).

Thus, the alternating black and white is not used to "reduce the amount of light detected by light receiving sections associated with adjacent optical systems", as suggested by Applicant, but is used to detect a change in position, even a "slight amount to the right or left" as disclosed by Tsunekuni. Examiner also asserts that Tsunekuni teaches the determination of the position using the first and second detector, as disclosed in the Abstract: "... a calculating section to derive the coordinates on the plate based on the output signals from the light receiving sections in association with the movement of the operating section". Applicant further argues that "Claim 1 is patentable over Tsunekuni because Tsunekuni teaches away from '...individual light sources are configured to emit light having at least three different and distinct levels...', as recited by Claim 11" (Page 11, 1<sup>st</sup> full paragraph of Applicant's response). First off, Examiner believes that Applicant intended to refer to Claim 11 instead of Claim 1. Also, Examiner asserts that Claim 11 does not recite the quoted portions referred to by Applicant, specifically "individual light sources" and "three different and distinct levels". Thus, Examiner asserts that the rejection of Claims 11 and 17 under 35 U.S.C. 102(b) by Tsunekuni is proper.

Regarding Applicant's arguments on Claims 21, 23, and 24, it appears that Applicant intended to refer to Claim 24 instead of Claim 14 on Page 11 of Applicant's response. Applicant argues, on Page 12 of Applicant's response that:

"Piot does not teach 'an optical navigation system comprising: a coherent source.. a first detector.. and a second detector' "

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and

"Assume for the sake of argument that Piot's optical sensing assembly is analogous to the optical system recited in Claim 21. Piot's optical sensing assembly 260 does not include a coherent source. In fact, referring to FIG. 3 of Piot, Piot's optical sensing assembly 260 could not be modified to include a coherent source 250 because Piot's optical sensing assembly 260 requires the coherent source 250 to be external to the optical sensing assembly 260."

Examiner asserts that the optical sensing assembly 260 does not correspond to the "optical navigation system" as recited in Claim 21, as interpreted by Examiner in the initial and present Office Actions, but rather, the entire disclosed system of Fig. 3 (including the coherent light source 250) constitute Applicant's claimed "optical navigation system". Thus, while the optical sensing assembly 260 (essentially a receiver/detector assembly) does not contain a coherent source, the system as disclosed by Piot in Fig. 3 (including the coherent light source 250 which provides collimated beam 305) includes a coherent source. Thus, Examiner asserts that the rejection of Claims 21, 23, and 24 under 35 U.S.C. 102(b) by Piot is proper.

Regarding Applicant's arguments on Claims 1, 5, and 8, Applicant argues that "Boillot does not teach or suggest 'the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections,' as recited by Claim 1" and "For example, in the abstract Boillot states, The position and orientation of the target object may be determined without moving the sensor head and without knowing its position and orientation." Examiner asserts that the full disclosure of Applicant's cited portion of the abstract of Boillot recites:

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"By proper processing of the bi-dimensional and tri-dimensional data, the position and orientation of the target object may be determined without moving the sensor head and without knowing its [the sensor head's] position and orientation." (Examiner's interpretation placed in brackets)

Examiner asserts that the above citation discloses the invention of Boillot as determining the position and orientation of the target object with respect to the sensor head without any a priori information on the sensor head (i.e. without requiring the predetermined knowledge of the position and orientation of the sensor head). Clearly, the position and orientation data of the target object obtained through operation of the sensor is the position and orientation of the target object *relative to the sensor head*, as the sensor head obtains and processes the received bi-dimensional and tri-dimensional data. Thus, Examiner asserts that the rejection of Claims 1, 5, and 8 under 35 U.S.C. 102(e) by Boillot is proper.

### *Conclusion*

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571)272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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THANH X. LUU  
PATENT EXAMINER